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EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,384	KELLY ET AL.	
	Examiner	Art Unit	
	David S. Kim	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s):

(claims 5 and 13) a plurality of loops in the network and

(claim 17) more loops.

It appears that the figures only show one loop.

No new matter should be entered.

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show Fig. 8 as described in the specification. In particular, the specification discusses an interleaver 34 (p. 17-18), but Fig. 8 does not appear to show the corresponding interleaver. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

3. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled

"Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. **Claims 1 and 11-12** are objected to because of the following informalities:

In claim 1, the following phrase reads awkwardly,

"whereby optical signals in at least one spectral band are optically interrupted in a different node from optical signal in at least one other spectral band."

Examiner respectfully suggests an adjustment to this phrase, such as,

"whereby optical signals in at least one spectral band are optically interrupted in one node and optical signals in at least one other spectral band are optically interrupted in a different node."

In claims 11-12, line 1 of each claim, "claim 8" is used where -- claim 9 -- may be intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Srivastava et al.

7. **Claims 1-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Srivastava et al. (U.S. Patent No. 6,025,941, hereinafter "Srivastava").

Regarding claim 1, Srivastava discloses:

A method of avoiding an amplified spontaneous emission (ASE) loop in an optical network (Fig. 1) comprising a plurality of nodes coupled via optical paths, the nodes and optical paths forming a loop in the network, comprising the steps of:

dividing (e.g., wavelength selective gratings 163-164 in WAD1) an optical spectrum of the optical network into a plurality of separate spectral bands; and

providing a plurality of optical seam filters (filters 181, 183, 185; col. 7, l. 7-27), each optically interrupting optical signals in a respective spectral band, distributed among a plurality of nodes (note filters 181, 183, 185 distributed among three WAD sites 101-103 in Fig. 1) around the loop whereby optical signals in at least one spectral band (e.g., notch filter in one WAD site for filtering bands 310-313 in Fig. 3A; col. 7, l. 14-19) are optically interrupted in a different node from optical signals in at least one other spectral band (e.g., notch filter in another WAD site for filtering band 303 in Fig. 3A; col. 7, l. 19-22), the optical seam filters providing at least one optical interruption around the loop for each spectral band.

Regarding claim 2, Srivastava discloses:

A method as claimed in claim 1 and including the step of, for at least one node including an optical seam filter for a spectral band, add/drop multiplexing (add and drop gratings 161-164 in WAD1 in Fig. 1; col. 7, l. 22-27) optical signals of the spectral band at the node.

Regarding claim 3, Srivastava discloses:

A method as claimed in claim 1 wherein the optical spectrum is divided into at least two non-overlapping spectral bands each including a plurality of optical wavelengths (any suitable combination of spectral bands in Fig. 3A).

Regarding claim 4, Srivastava discloses:

A method as claimed in claim 1 wherein the optical spectrum is divided into at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands in Fig. 3A, e.g., two adjacent channels in band 303).

Regarding claims 5-8, claims 5, 6, 7, and 8 are network claim that correspond largely to the network claims 1, 2, 3, and 4, respectively. Therefore, the recited means in network claims 1-4 read on the corresponding means in network claims 5-8. Claims 5-8 also include limitations absent from claims 1-4. Srivastava also discloses these limitations:

the nodes and optical paths forming *a plurality of loops* (Fig. 7) in the network.

Regarding claim 9, Srivastava discloses:

An optical network comprising

a plurality of nodes (WAD sites 101-103 in Fig. 1) coupled via optical paths (fiber spans 104-106), the nodes and paths forming a loop in the network,

wherein an optical spectrum (e.g., Fig. 3B) for communications among the nodes via the optical paths comprises a plurality of separate spectral bands (channels 303 in Fig. 3A), and

wherein a plurality of nodes (WAD sites 101-103 in Fig. 1) in the loop each comprise at least one optical seam filter (filters 181, 183, 185; col. 7, l. 7-27) for optically interrupting the loop for optical signals in a respective one of the spectral bands, all (a filter for each communication channel 303 in Fig. 3A, col. 7, l. 19-22) of the spectral bands of the optical spectrum thereby being optically interrupted by respective optical seam filters distributed (note filters 181, 183, 185 distributed among three WAD sites 101-103 in Fig. 1) among at least two nodes in the loop.

Regarding claim 10, Srivastava discloses:

An optical network as claimed in claim 9 wherein at least one of the plurality of nodes in the loop comprising an optical seam filter further comprises an optical add/drop multiplexer (add and drop gratings 161-164 in WAD1 in Fig. 1; col. 7, l. 22-27) for add/drop multiplexing optical signals of the respective spectral band at the node.

Regarding claim 11, Srivastava discloses:

An optical network as claimed in claim 8 (or 9) wherein the optical spectrum comprises at least two non-overlapping spectral bands each including a plurality of optical wavelengths (any suitable combination of spectral bands in Fig. 3A).

Regarding claim 12, Srivastava discloses:

An optical network as claimed in claim 8 (or 9) wherein the optical spectrum comprises at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands in Fig. 3A, e.g., two adjacent channels in band 303).

Regarding claims 13-16, claims 13, 14, 15, and 16 are network claim that correspond largely to the network claims 9, 10, 11, and 12, respectively. Therefore, the recited means in network claims 9-12 read on the corresponding means in network claims 13-16. Claims 13-16 also include limitations absent from claims 9-12. Srivastava also discloses these limitations:

the nodes and paths forming *a plurality of loops* (Fig. 7) in the network.

Regarding claim 17, Srivastava discloses:

A method of avoiding amplified spontaneous emission (ASE) loops in an optical network (Fig. 1) comprising nodes coupled via optical fibers, comprising the steps of, in each of one or more loops each comprising a plurality of the nodes:

providing an optical seam filter (e.g., filter 181 in WAD1; col. 7, l. 7-27) for a first spectral band of an optical spectrum of the optical network in a first one of the nodes of the loop thereby to optically interrupt the loop for optical wavelengths within said first spectral band; and

providing an optical seam filter (e.g., filter 183 in WAD2; col. 7, l. 7-27) for at least one other spectral band of the optical spectrum in at least one other of the nodes of the loop, thereby to optically interrupt the loop for optical wavelengths in said at least one other spectral band, whereby the loop is optically interrupted for all spectral bands of the optical spectrum.

Regarding claim 18, Srivastava discloses:

A method as claimed in claim 17 and including the step of, least one node including an optical seam filter for a spectral band, add/drop multiplexing (add and drop gratings 161-164 in WAD1 in Fig. 1; col. 7, l. 22-27) optical signals of the spectral band at the node.

Regarding claim 19, Srivastava discloses:

A method as claimed in claim 18 wherein the optical spectrum is divided into at least two non-overlapping spectral bands each including a plurality of optical wavelengths (any suitable combination of spectral bands in Fig. 3A).

Regarding claim 20, Srivastava discloses:

A method as claimed in claim 18 wherein the optical spectrum is divided into at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands in Fig. 3A, e.g., two adjacent channels in band 303).

Israel et al.

8. **Claims 1-2, 4, 9-10, 12, 17-18, and 20** are rejected under 35 U.S.C. 102(e) as being anticipated by Israel et al. (U.S. Patent Application Publication No. US 2002/0131098 A1, hereinafter "Israel").

Regarding claim 1, Israel discloses:

A method of avoiding an amplified spontaneous emission (ASE) loop in an optical network (Fig. 1) comprising a plurality of nodes coupled via optical paths, the nodes and optical paths forming a loop in the network, comprising the steps of:

dividing (e.g., optical multiplexer/demultiplexer 125 in nodes) an optical spectrum of the optical network into a plurality of separate spectral bands; and

providing a plurality of optical seam filters (e.g., switches in Fig. 3; paragraph [0032]), each optically interrupting optical signals in a respective spectral band, distributed among a plurality of nodes (note that Fig. 3 may apply to the other nodes) around the loop whereby optical signals in at least one spectral band (e.g., subset of total channels for add/drop in "selected ones" node embodiment in paragraph [0013]) are optically interrupted in a different node from optical signals in at least one other spectral band (e.g., remaining channels that are not part of said subset for add/drop, these remaining channels for add/drop in a different node), the optical seam filters providing at least one optical interruption around the loop for each spectral band (end of paragraph [0003]).

Regarding claim 2, Israel discloses:

A method as claimed in claim 1 and including the step of, for at least one node including an optical seam filter for a spectral band, add/drop multiplexing (e.g., optical multiplexer/demultiplexer 125 in nodes) optical signals of the spectral band at the node.

Regarding claim 4, Israel discloses:

A method as claimed in claim 1 wherein the optical spectrum is divided into at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands from the "plurality of individual optical channels at different wavelengths" in paragraph [0008], e.g., two adjacent wavelengths within this plurality).

Regarding claim 9, Israel discloses:

An optical network comprising

a plurality of nodes (nodes in Fig. 1) coupled via optical paths (fiber 120), the nodes and paths forming a loop in the network,

wherein an optical spectrum (e.g., "plurality of individual optical channels at different wavelengths" in paragraph [0008]) for communications among the nodes via the optical paths comprises a plurality of separate spectral bands, and

wherein a plurality of nodes (nodes in Fig. 1) in the loop each comprise at least one optical seam filter (e.g., switches in Fig. 3; paragraph [0032]) for optically interrupting the loop for optical signals in a respective one of the spectral bands, all (end of paragraph [0003]) of the spectral bands of the optical spectrum thereby being optically interrupted by respective optical seam filters distributed (note that Fig. 3 may apply to the other nodes) among at least two nodes in the loop.

Regarding claim 10, Israel discloses:

An optical network as claimed in claim 9 wherein at least one of the plurality of nodes in the loop comprising an optical seam filter further comprises an optical add/drop multiplexer (e.g., optical multiplexer/demultiplexer 125 in nodes) for add/drop multiplexing optical signals of the respective spectral band at the node.

Regarding claim 12, Israel discloses:

An optical network as claimed in claim 8 (or 9) wherein the optical spectrum comprises at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands from the "plurality of individual optical channels at different wavelengths" in paragraph [0008], e.g., two adjacent wavelengths within this plurality).

Regarding claim 17, Israel discloses:

A method of avoiding amplified spontaneous emission (ASE) loops in an optical network (Fig. 1) comprising nodes coupled via optical fibers, comprising the steps of, in each of one or more loops each comprising a plurality of the nodes:

providing an optical seam filter (e.g., switches in Fig. 3 in node 105 in Fig. 1; paragraph [0032]) for a first spectral band of an optical spectrum of the optical network in a first one of the

nodes of the loop thereby to optically interrupt the loop for optical wavelengths within said first spectral band (e.g., subset of total channels for add/drop in "selected ones" node embodiment in paragraph [0013]); and

providing an optical seam filter (e.g., switches in Fig. 3 in node 107 in Fig. 1; paragraph [0032]) for at least one other spectral band of the optical spectrum in at least one other of the nodes of the loop, thereby to optically interrupt the loop for optical wavelengths in said at least one other spectral band (e.g., remaining channels that are not part of said subset for add/drop, these remaining channels for add/drop in a different node), whereby the loop is optically interrupted for all (end of paragraph [0003]) spectral bands of the optical spectrum.

Regarding claim 18, Israel discloses:

A method as claimed in claim 17 and including the step of, least one node including an optical seam filter for a spectral band, add/drop multiplexing (e.g., optical multiplexer/demultiplexer 125 in nodes) optical signals of the spectral band at the node.

Regarding claim 20, Israel discloses:

A method as claimed in claim 18 wherein the optical spectrum is divided into at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands from the "plurality of individual optical channels at different wavelengths" in paragraph [0008], e.g., two adjacent wavelengths within this plurality).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Israel et al. as primary reference

11. **Claims 3, 11, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Israel as applied to the claims 1, 9, and 18 above.

Regarding claim 3, Israel does not expressly disclose:

A method as claimed in claim 1 wherein the optical spectrum is divided into at least two non-overlapping spectral bands each including a plurality of optical wavelengths.

Rather, Israel broadly discloses the application of its teachings for "a plurality of individual optical channels at different wavelengths" (paragraph [0008]). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to employ at least four channels at four different wavelengths. One of ordinary skill in the art would have been motivated to do this since such a number falls within the obvious scope of the teachings of Israel. Accordingly, these claim features would be met by any suitable combination of non-overlapping spectral bands each including at least two channels at two different, respective wavelengths.

Regarding claim 11, claim 11 introduces limitations that correspond to the limitations introduced by claim 3. An obviousness argument is applied to address these limitations of claim

3. Similarly, the obviousness argument is applied here to address these same limitations in claim 11.

Regarding claim 19, claim 19 introduces limitations that correspond to the limitations introduced by claim 3. An obviousness argument is applied to address these limitations of claim 3. Similarly, the obviousness argument is applied here to address these same limitations in claim 19.

12. **Claims 5-8 and 11-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Israel as applied to claims 1, 3, and 9 above, and further in view of Srivastava.

Regarding claims 5-8, claims 5, 6, 7, and 8 are network claims that correspond largely to the network claims 1, 2, 3, and 4, respectively. Therefore, the recited means in network claims 1-4 read on the corresponding means in network claims 5-8. Claims 5-8 also include limitations absent from claims 1-4. Israel does not expressly disclose these limitations:

the nodes and optical paths forming *a plurality of loops* in the network.

However, optical networks that comprise a plurality of loops are extremely common and well known in the art. Srivastava shows such a network that comprises a plurality of loops (Fig. 7). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the teachings of Israel for a network with a plurality of loops. One of ordinary skill in the art would have been motivated to do this since plurality of loops can enable protection measures in the case of structural failures (Srivastava, col. 7, l. 40-58). Additionally, Israel encourages the application of its teachings for bi-directional networks (paragraph [0038]), and the network of Srivastava constitutes such a bi-directional network (Srivastava, Fig. 7).

Regarding claim 11, claim 11 introduces limitations that correspond to the limitations introduced by claim 3. An obviousness argument is applied to address these limitations of claim

3. Similarly, the obviousness argument is applied here to address these same limitations in claim 11.

Regarding claim 12, Israel in view of Srivastava discloses:

An optical network as claimed in claim 8 (or 9) wherein the optical spectrum comprises at least two spectral bands having interleaved optical wavelengths (any suitable combination of spectral bands from the "plurality of individual optical channels at different wavelengths" in paragraph [0008], e.g., two adjacent wavelengths within this plurality).

Regarding claims 13-16, claims 13, 14, 15, and 16 are network claims that correspond largely to the network claims 9, 10, 11, and 12, respectively. Therefore, the recited means in network claims 9-12 read on the corresponding means in network claims 13-16. Claims 13-16 also include limitations absent from claims 9-12. Israel does not expressly disclose these limitations:

the nodes and paths forming *a plurality of loops* (Fig. 7) in the network.

These limitations correspond to the limitations introduced by claim 5. Srivastava is applied to address these limitations of claim 5. Similarly, Srivastava is applied here to address these same limitations in claims 13-16.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Johansson, Bock et al., and Katagiri et al. are cited to show related methods and networks for avoiding an ASE loop by optically interrupting optical signals. Katagiri et al. is also cited to show the use of an interleaver to avoid an ASE loop.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DSK

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